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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,710	01/28/2000	Gadi Lenz	Lenz 9-12	2563

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EXAMINER
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BELLO, AGUSTIN

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 06/17/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/493,710	<b>Applicant(s)</b> LENZ ET AL.	
	<b>Examiner</b> Agustin Bello	<b>Art Unit</b> 2633	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 April 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-15 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 6,289,151 in view of Harvey. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patent and the application claim an all-pass optical filter comprising an input port and an output port, a splitter/combiner, a feedback path, and a plurality of ring resonators. Although the instant application and the patent are not identical, they claim essentially the same invention. The application claims that the all-pass filter is configured to apply a plurality of frequency-dependent time delay periods to the input optical pulse to define a time delay spectrum having a plurality of delay peaks, and the free spectral range of the filter as defined by the spacing between the delay peaks is matched to the regular repetition rate of the input optical pulse. The specification of the application (page 6 lines 8-21) states that the result of the above limitation is the correction of certain dispersion of a pulsed laser which occurs when input optical pulse repeatedly circulates along a feedback path and interferes with itself (page 7

lines 18-20), but preserves the amplitude of the signal (page 10 lines 21-24). The patent claims that the all-pass filter, constructed of the same components as that of the application, corrects dispersion in a pulsed signal by returning the signal to a feedback path to interfere with light in the dispersed pulse thereby compensating dispersion in the pulse while substantially preserving the amplitude of each frequency in the pulse. Furthermore, it is well known in the art that the application of heat to a path can change the free spectral range of the group delay and the desired phase. Also, Harvey, in the same field of endeavor, teaches that creating a plurality of time delay periods to that are in synch with the repetition rate of the input pulse is well known in the art. Both the application and the patent claim an all pass optical filter arranged in parallel with a Mach-Zehnder interferometer (e.g. called Mach-Zehnder in the application, and called a plurality of ring resonators arranged as a series of coupled rings in the patent claim 5).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey in the article "Harmonically mode locked fiber ring laser with an internal Fabry-Perot stabilizer for soliton transmission."

Regarding claims 1 and 14, Harvey teaches an article comprising an all-pass optical filter including an input port for receiving an input optical pulse having a regular repetition rate (e.g. 2.5 GHz); an output port; a splitter/combiner a path and a all-pass filter (as seen in Figure 1);

wherein the all-pass optical filter is configured to apply a plurality of frequency-dependent time delay periods to the input optical pulse to define a time delay spectrum having a plurality of delay peaks (as seen in Figure 2), and the free spectral range of the filter as defined by the spacing between the delay peaks is matched to the regular repetition rate of the input optical pulse (page 107, first column, second paragraph). Harvey differs from the claimed invention in that Harvey fails to specifically teach a feedback path wherein the all-pass optical filter is configured. Instead, Harvey employs the use of a feedforward design and produces the same result as the claimed invention. One skilled in the art would clearly have recognized that either a feedback or a feedforward design would have produced the same results so long as the two signals interfered with one another at a designated point along the loop formed by the option selected. One skilled in the art would have been motivated to select the feedback design option in the interest of size, cost, or compatibility with an established system. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have used a feedback path in order to produce the same results as the feedforward loop design taught by Harvey.

Regarding claim 2, as discussed above a feedback path would have been obvious, and the path of Harvey comprises a ring resonator (as seen in Figure 1) and a heating element for heating a section of the ring resonator (e.g. resistive element described page 108, second column, first paragraph).

Regarding claim 3, Harvey teaches the all-pass optical filter of claim 1 arranged in parallel with a Mach-Zehnder interferometer. (e.g. modulator in Figure 1).

Regarding claim 4, Harvey teaches the all-pass optical filter of claim 1 in which the free-spectral range of the filter is matched to the repetition rate of the pulse train by the free spectral range being equal to the repetition rate (page 107, first column, second paragraph).

Regarding claim 5, Harvey teaches An assembly for use in an optical communication system comprising an optical multiplexer/demultiplexer device including the all-pass optical filter of claim 4 (inherent in the experiment described on page 109).

Regarding claim 6, Harvey teaches the all-pass optical filter of claim 1, in which the free-spectral range of the filter is matched to the repetition rate of the pulse train by the free spectral range being offset from the repetition rate by a sufficiently small degree that each frequency of the pulse train falls within a bandwidth of one of the plurality of delay peaks (as seen in Figure 2).

Regarding claim 7, Harvey teaches an assembly for use in an optical communication system comprising a pulsed laser (2.5 GHz OSC of Figure 1) and the all-pass optical filter (e.g. Fabry-Perot of Figure 1) of claim 6, in which the all-pass optical filter corrects linear chirp of the pulsed laser (as described in the abstract).

Regarding claims 8-10, Harvey teaches the communication system claimed (Figure 1).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Harvey.

Regarding claim 11, Harvey teaches a method of generating a tunable delay for an optical signal with use of a single-stage all-pass optical filter wherein the pulse train of the optical signal has a regular repetition rate, the method comprising matching the spacing between the frequency-dependent time delay peaks generated by the all-pass optical filter to the repetition rate of the pulse train (Figure 1) (Figure 2).

Regarding claim 12, Harvey teaches the method of claim 11, in which the free-spectral range of the filter is matched to the repetition rate of the pulse train by the free-spectral range being equal to the repetition rate (page 107, first column, second paragraph).

Regarding claim 13, Harvey teaches the method of claim 11, in which the free-spectral range of the filter is matched to the repetition rate of the pulse train by the free-spectral range being offset from the repetition rate by a sufficiently small degree that each frequency of the pulse train falls within a bandwidth of one of the plurality of delay peaks. (as seen in Figure 2).

#### ***Response to Arguments***

7. Applicant's arguments filed 4/1/04 have been fully considered but they are not persuasive. The applicant argues that the independent claims are patentably distinct from the cited references. The examiner disagrees. First, the applicant argues that the Karzinov is silent regarding matching the free spectral range of an all-pass filter to the regular repetition rate of an input optical pulse. However, Karzinov clearly discloses such a concept in column 11 lines 31-67. Furthermore, the applicant's claim language only requires that the all-pass filter of Karzinov be "configured" in same manner as that claimed in order to produce the same result. Clearly, the

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all-pass filter of Karzinov could have been configured as claimed since Karzinov discloses as much in column 11 lines 31-67. Moreover, Harvey clearly teaches that the concept claimed by the applicant is well known in the art (Figure 2). Harvey specifically teaches that the “free spectral range is essentially equal to the pulse repetition rate.” The examiner see no difference between this disclosure by Harvey and the applicant’s claim that the free-spectral range, as defined by the spacing between the delay peaks, is matched to the repetition rate of the input optical pulse. Clearly, the applicant’s claim to “matched” can be viewed as equivalent to Harvey’s “essentially equal.” Figure 2 of Harvey further supports the examiner’s position.

The applicant also contends that the cited references fail to address synchronization of high-speed transmission signals with low speed control signals. However, the examiner respectfully points out that this limitation is only in claim 15 and not the other independent claims. Claim 15 is only rejected by the double-patenting rejection. Furthermore, the all-pass filter of the combination of Harvey and Karzinov could clearly have been applied to a multitude of signals including control signals.

Next, the applicant contends that Harvey’s etalon filter cannot be considered an all pass filter. However, the examiner disagrees. Since the system and filter of Harvey produce the same result as the claimed invention, it is clear that the filter of Harvey can indeed be considered an all-pass filter.

8. In response to applicant's argument that the cited references fail to teach that the all-pass filter is configured to match the free-spectral range of the filter with the repetition rate of the input signal, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the



claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

AB  
June 13, 2004

*M.R. Sedighian*  
M.R. SEDIGHIAN  
Primary Examiner  
Art Unit: 2633